Annual Committee of Convocation, and the Committee of Graduates of the University of London; the Royal Colleges of Physicians and Surgeons; University College; King's College; Bedford College; the Medical Schools; the Theological Colleges; and the Association for Promoting a Professorial University for London took part, and a second in the afternoon, composed solely of members of Convocation opposed to the scheme.

Lord Rosebery's replies show that personally he is anxious to give effect to the Commissioners' recommendations. To the first deputation he said that the Government attach great importance to the Report of the Commission, and are fully sensible of the fact that the present time seems to offer a favourable opportunity, and one that ought not to be postponed, for the appointment of a Statutory Commission in the sense desired by those who had addressed him; while to the second, he made it clear that the opinions of the Government point in the direction of the appointment of a Statutory Commission, which would be able to receive full representations from any interests involved, and thereby be enabled to arrive at a scheme not unsatisfactory both to the present University and to the Empire at large.

Lastly, on Tuesday evening, Convocation of the University of London met, and for the first time came face to face with the question of approval or disapproval of the Commissioners' recommendations. As pointed out in a previous article (vol. l. p. 269), the power of veto possessed by Convocation under the Charter lent considerable importance to the decision arrived at, since an adverse vote might seriously retard the reorganisation of the existing University. In view of this contingency, it is highly satisfactory to record that Convocation, the last of the bodies to which the scheme has been submitted, by 157 votes to 133 resolved—"That Convocation, while desiring to express generally its approval of the proposals contained in the Report of the Royal Commission, is of opinion that power ought to be given to the Statutory Commission to vary the details of the scheme, and that it ought to be made an instruction to the Commissioners, before framing the statutes and regulations, to confer with duly accredited representatives of the Senate and of Convocation as to the modifications which may be desirable;" a previous resolution affirming that there should be one University in London, and not two, being carried by a slightly larger majority, namely, 206 votes to 175. These majorities may not be large, but they may be fairly taken to proportionately represent the opinion of the 3600 members of Convocation, since so far as any expression of opinion has been elicited by the various parties, 1165 members have expressed general approval of the Commissioners' recommendations, while 900 have indicated that in their view any teaching University for London ought to be constituted apart from the existing University. It may be earnestly hoped that with this vote the long controversy within the University has come to an end, and that all parties will now unite in the endeavour to make the new University worthy of the capital of the Empire.

W. PALMER WYNNE.

NOTES.

We are informed that Mr. G. F. Scott Elliot has arrived at Blantyre, in the Shiré Highlands, on his way home. His route from Ruwenzori has been by Karagwe and Urundi, to the extreme north of Tanganyika, which was traversed in Arab dhows to Abercorn. Thence he followed the usual route by the Stevenson Road to Lake Nyassa and the Upper Shiré.

Prof. E. Warburg, Professor of Physics in Freiburg University, has been appointed Prof. Kundt's successor in Berlin University.

M. Hautefeuille, Professor of Mineralogy at the Sorbonne, has been elected a member of the Section de Minéralogie of the Paris Academy of Sciences.

Dr. S. Nawaschin has been appointed Professor of Botany and Director of the Botanic Garden at Kiew, Russia.

The death is recorded, at Berne, on December 13, of Dr. F. A. Flückiger, well known for his researches in pharmacologica botany, at the age of sixty-six.

Dr. Murray Thomson died on the 13th inst., in his sixty-first year. He was a Fellow of the Royal Society of Edinburgh and a Fellow of the University of Calcutta. For some years he was Professor of Experimental Science in the Government Engineering College, Roorkee, and chemical examiner for the Government in the North-Western Provinces of India. He was also the author of several medical and chemical treatises.

The *Times* correspondent at Teheran reports that the town of Kuchan, which was destroyed by an earthquake fourteen months ago, and immediately rebuilt, was again destroyed on January 17. The extent of the damage and the loss of life are not yet known. Earthquake shocks were also felt at Meshed, but no damage was done.

We learn that a general survey of the tides and currents on the Canadian coasts is now being commenced by the Canadian Department of Marine and Fisheries. It cannot fail to be of great use to navigation, and of especial interest to science, as the districts will include the phenomenal one of the Bay of Fundy with its 70 feet rise of tide, with which we have nothing to compare in magnitude in the British Isles.

The Königliche Gesellschaft der Wissenschaften of Göttingen are organising a conference of delegates of scientific societies and academies, for the consideration of the relations between the variations in the intensity of gravity and the geological constitution of the earth's crust. It is intended that the congress shall take place at Innsbrück on September 5, where and when the International Geodetic Association will hold a meeting.

The first number of the new series of *Science* has now reached us. To the editorial committee announced in our issue of December 20, should be added President T. C. Mendenhall of the Worcester Polytechnic Institute (Physics), Prof. R. H. Thurston of Cornell University (Engineering), Prof. Le Conte of the University of California (Geology), and Prof. H. F. Osborn of Columbia College (General Biology). The editorial committee, composed of the American men of science best known in England, and the contents of the first number, promise a journal that will adequately represent the progress of science in America. If in a multitude of counsellors there is wisdom, the journal should greatly advance scientific knowledge; not, however, by publishing memoirs and papers for specialists, but by promoting intercourse between students of all branches of nature.

On Friday, the 11th inst., the Physical Society of London, in response to an invitation from Prof. Carey Foster, visited the new physical laboratories of University College. Before the commencement of the regular meeting in the lecture theatre (a report of which will be found in another column), the large number of members present went over the laboratories and practical class-rooms. There are three large rooms solidly built on the ground, and devoted to the use of the more advanced students, and of those engaged in original research. They are in a separate building apart from the main structure, and were specially built for physical work. Above one of them is the optical room, while within the main building there are two large basement rooms, one used chiefly for electrical and magnetic measurements, and one reserved for the practical classes. On the floor above are the lecture theatre and smaller classroom, apparatus room, chemical room, &c. The laboratories are lighted in the main with electric light, the direct current, supplied by the St. Pancras Vestry, being also used to charge a set of about fifty accumulators. A collection of apparatus was on view, more especially that designed for educational experiments, and used by students in the practical classes. Some of the pieces shown were of historical interest, among them being various instruments designed and used by Ritchie, who was formerly Professor of Natural Philosophy in the College.

ON Thursday last, January 17, the French Society of Aerial Navigation inaugurated the lectures to be delivered to the pupils of the newly-established school of aeronautics. During an address, Prof. Cornu, who was in the chair, said that he was glad that the Academy of Sciences had always exhibited an interest in aerial navigation. In 1782, a programme was drawn up of experiments to be conducted with the help of balloons. In 1794, there was established at Meudon the first aeronautical school, and the first captive balloons were made. In 1802, Gay-Lussac and Biot made the first scientific ascents, which remained almost unequalled until sixty years afterwards, when Glaisher took his aerial travels. The first dirigible balloon was constructed in 1870. Later, Paul Bert investigated the condition of human life at high altitudes. With these facts before them, the pupils of the French aeronautical school were reminded that their efforts would always be supported by the Academy. Aeronautics had been always popular in France, and had rendered good services to science and to the country.

SOME forgotten pages of photographic history were brought before the Brixton Camera Club, by Mr. W. H. Harrison, on January 15. It was pointed out that the many photographic researches of Foucault have been so completely overlooked that in scarcely any recent photographic history is mention to be found of more than his name, if so much as that. Foucault's early experiments in photographing the spectrum upon daguerreotype plates are interesting, and his results were not complicated by the presence of collodion, gelatine, or other colloids. In those early days photographers were so anxious to improve processes and to quicken them for purposes of portraiture, that perhaps these researches in the higher branches of photography interested them little, and soon afterwards were forgotten entirely, so that the name of Foucault as a pioneer of photography has practically passed out of the literature of the subject for nearly a generation. H. Bayard, the first to exhibit a selection of photographs to the general public, in July 1839, has also been much neglected in modern photographic literature. By means of his process, direct positives could be obtained without the intervention of a negative. Bayard's process seems likely to initiate useful modifications at the present time, in the easy production of reversed negatives. Sometimes it is now facetiously said that the best place for backings to prevent halation is on the front of the plate, meaning the use of a thick coating of emulsion: perhaps on Bayard's principle something of the kind may hereafter be done in a more literal sense. It should be remembered that there are two kinds of halation, and that one of them is due to reflection among the particles of silver haloid in the film itself. Perhaps something of especial benefit in astronomical photography may hereafter be evolved from Bayard's principle. Who knows but that it may hereafter lead to the production of a new class of dry plates which can be freely exposed to light, and, when required for use, sensitised by an alcoholic or other volatile liquid containing a haloid salt, to enable the re-drying to be effected quickly?

DR. A. MACDONALD, of the U.S. Bureau of Education, has sent us a number of statistics, showing the sensibility to pain, by pressure, in hands of individuals of different classes, sexes, and nationalities. So far as they go, the results indicate that the majority of people are more sensitive to pain in their left hand than in the right. Women appear to be more sensitive to pain than men, but of course it does not necessarily follow that women cannot endure more pain than men. American professional men are more sensitive to pain than American business men, and also than English or German professional men. The labouring classes are much less sensitive to pain than the non-labouring classes, and the women of the lower classes are much less sensitive to pain than those of the better classes. The general conclusion is that the more developed the nervous system, the more sensitive it is to pain. It is worth remark that, while the thickness of tissue on the hand has some influence, it has by no means so much as one might suppose, *à priori;* for many with thin hands require much pressure before experiencing any pain.

AN auriferous quartz-vein has been met with near Douglas in the Isle of Man. This seems to be the first recorded discovery of gold in that island, though, in view of its presence in the very similar districts of Merioneth and Wicklow, it is not in any way surprising.

Electrical Discovery is the title of a new fortnightly journal, in which it is intended to publish information on electrical patents filed in the British Patent Office. The *Official Journal* furnishes short abstracts of such inventions, but these do not appear until after the period for opposing the grants of the patents has expired. The new journal is designed to supply the need, by giving electricians early abstracts of all patent specifications and amendments relating to electricity. Digests and reports of patent cases of interest to electricians will also be included, and an index of articles on electrical subjects.

A FEW years ago it was practicable for persons of moderate income to subscribe to all the periodicals devoted to engineering and allied sciences, and to keep abreast with the contents. Now the number of such journals is so great, and so many are the memoirs and works bearing on engineering, that engineers, like the rest of us, are feeling the need of an index of their literature. Suggestions for the construction of such an index are given by Prof. G. D. Shephardson in the *Transactions* of the American Institute of Electrical Engineers for November 1894, and the following number contains a report of a long discussion on the subject. It is a satisfactory sign of the development of the scientific side of engineering, that electrical, mechanical, hydraulic, civil, and mining engineers want an index to their literature.

THE great Andalusian earthquake of December 25, 1884, as is now well known, produced slight disturbances of the magnetic curves at Lisbon, Parc St. Maur, Greenwich, and Wilhelmshaven. Two astronomical clocks were also stopped at the observatory of San Fernando, near Cadiz. From the times so recorded, the French Commission appointed to study the earthquake obtained values which seemed to show that the velocity of the earthquake wave diminished as it radiated outwards. In two recent papers (*R. Accad. dei Lincei, Rend.* iii. 1894, pp. 303-310, 317-325), Dr. G. Agamennone reconsiders the problem. He shows that the apparent diminution of velocity would disappear if the time at Cadiz were a minute too late. And an error of this kind, he remarks, is possible, for the times given for the magnetic observatories correspond to the beginning of the movement, whereas the clocks at Cadiz would be stopped during a later phase. Assuming the velocity uniform, he finds it to be 3·15 ± ·19 kilometres per second, a value which agrees very closely with some recent determinations.

The light of the Blue Grotto of Capri, as well as that of the so-called red and green grottoes (*grotto rosso* and *grotto verte*) has been spectroscopically tested by Dr. H. W. Vogel, and is described in the current number of *Wiedemann's Annalen.* The most striking fact about the Blue Grotto was the occurrence of an absorption band between the Fraunhofer lines C and E of the solar spectrum, which does not occur in ordinary water. In addition to this, the red and the orange were extinguished as far as the D line. The same spectrum was exhibited by the water in front of the grotto. The "green grotto" is a rocky tunnel filled with bluish-green sea-water. The rocky walls show green reflections in the interior, produced by the impact of the bluish light from the water upon the yellow stones. But the absorption band noted in the Blue Grotto is here entirely absent. From the top of the cliffs, patches of azure-blue water could be seen surrounded by green. They all showed the absorption band, and retained their position permanently, so that they are probably due to some local cause. The "red grotto" does not show a trace of red light.

Attention was recently drawn in our columns to an interesting observation made by Dr. Ostroumoff, of Sebastopol, on the power possessed by the Copepod *Pontellina mediterranea*, of jumping in the air upon the surface film of water. It appears from several further communications that this peculiar habit is also possessed by several other Copepods, viz. *Pontella atlantica* (M. Edw.), according to Dahl (*Verh. deutsch. Zool. Gesell.* 1894, p. 64), and *Pontella securifer* (Brady), according to an observation made by Captain Hendorff, who states that he several times saw this Copepod leap quite a foot high from the water in which it was contained. Herr Mrázek, in recording Captain Hendorff's observations (*Zool. Anz.* No. 415, p. 5), also mentions the additional case of a Schizopod having the same habits. This phenomenon, however, can be easily observed in the case of British Schizopods, and appears to be the result of abnormal conditions rather than a natural habit. Herr Mrázek does not support Dr. Ostroumoff in his view of the connection between this habit and the process of exuviation; he regards the movements in question as either purposeless and sportive, or for the sake of effecting escape from enemies. The latter view certainly receives support from the somewhat analogous case of the flying fish.

We have received an elaborate paper read before the Congress of Scandinavian Naturalists at Copenhagen, by Dr. Ernst Abery, on the transmission of yellow fever. Much uncertainty and difference of opinion exist as to the means by which this disease is distributed, some authorities asserting that it has a purely local malarial origin, and cannot be imported into a place; whilst others are equally convinced that it can be imported, but is not transmissible directly from one individual to another. Dr. Abery, who has made a special study of the subject, has gathered together the principal facts about the dissemination of yellow fever, which are admitted by various authorities, and seeks to connect them together and explain them by a theory of his own. He accepts for this purpose the presence of a particular microbe specific to yellow fever, and regards it as capable of existing in different forms, such as spores and rodlets, and endowed with correspondingly different characters and degrees of virulence. By means of this theory, Dr. Abery explains many otherwise puzzling phenomena, and has produced an excellent working hypothesis. Unfortunately, however, it must remain only a hypothesis, for so far no microbe specific to yellow fever has been discovered and accepted; but possibly the author intends attacking this aspect of the question next.

The new volume of *Memoirs* (Zapiski) of the Caucasian Geographical Society (vol. xvi.) is again one of exceptional interest. It contains, first, a series of botanical papers on the flora of Northern Caucasia, by I. Akinfieff, together with an account of a journey of the same author in Ossetia and Svanetia; three papers, by N. M. Alboff, on the vegetation of Western Transcaucasia, on new species found in Abkhasia, and on the Abkhasian ferns; and an abridged translation of several papers, by Dr. E. Dieck, on the flora of Western Transcaucasia; the series thus making a very valuable addition to our present knowledge of the flora of Caucasus. And next, the same volume contains a series of papers devoted to the still imperfectly known parts of the central section of the Main Caucasus ridge. M. N. Zhukoff contributes a paper on the glaciers of North-east Svanetia, with a new and very interesting map (1·3 miles to the inch) of a wide glacier region; A. V. Pastukhoff describes his ascensions of the Shah-dagh and the Ararat, as well as his visits to some of the high-level villages, of which Kurush, situated at a height of 8175 feet, is the highest in Caucasia—the paper being accompanied by small maps and photographs of the Kichen-dagh, the Nesen-dagh, and the Kurush village; M. and Mme. Rossikoff contribute two papers on the glaciers and Alpine lakes of the Central Caucasus main chain, giving exact measurements of the speed of motion of several glaciers; and another Alpinist, N. Dinnik, gives a description of Mount Oshten and the surrounding parts of the province of Kuban, which is full of very interesting geographical and botanical data. And, finally, two papers, by MM. Shalikoff and Andronikoff, are geographical and statistical descriptions of two districts of the government of Tiflis—Ksan and Uraveli. An index of all the papers contained in the hitherto published volumes of both the *Memoirs* (Zapiski) and the *Bulletin* (Izvestia) of the Caucasian Geographical Society, is also a most welcome feature of the present volume.

A second edition of Dr. G. V. Poore's instructive "Essays on Rural Hygiene" has been published by Messrs. Longmans, Green, and Co. The new edition includes more than fifty additional pages.

The Rose Polytechnic Institute, Terre Haute, Indiana, has published a bulletin on "Physical Units," by Prof. Thomas Gray. The bulletin comprises a concise and admirable collection of definitions of fundamental and derived units.

No. 2 of the *Botanisches Centralblatt* for 1895 contains an exhaustive bibliography of the colouring matters of plants, by Dr. Hermann Ritter Schrötter-Kristelli, together with some new observations on the occurrence of carotin.

A work entitled "Molecules and the Molecular Theory of Matter," by A. D. Risteen, will be published in February by Messrs. Ginn and Co. The work is intended to be a popular exposition of the molecular theory of matter as it is held by the leading physicists of to-day. The subject is treated from a physical standpoint.

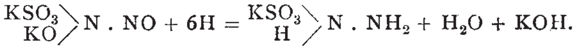
When a book twenty years of age blossoms into a second edition, it is hardly necessary to say that the original must have undergone a thorough revision. This is the case with Prof. Alfred Newton's little "Zoology," published in 1874, among a series of manuals of elementary science, by the Society for Promoting Christian Knowledge. The new edition takes in much of the zoological work done during the past two decades, thus rendering it one of the cheapest, handiest, and best broad introductions to the study of zoology.

The publication is announced of the first number of a *Phycotheca Boreali-americana*, by Messrs. F. S. Collins and Isaac Holden and Dr. W. A. Setchell. The work will include all families of Algæ, both freshwater and marine (except, for the present, Characeæ, Desmidieæ, and Diatomaceæ), from the Arctic Ocean to the Isthmus of Panama, including the West Indies. Each number will include fifty species, and the price will be five dollars. Subscriptions and offers of contributions are to be addressed to Mr. Frank S. Collins, 97 Dexter Street, Mass., U.S.A.

FROM a note in the *Botanical Gazette* we learn that the fox-tail grass or squirrel-tail grass, *Hordeum jubatum*, is a serious pest to stock in the Western States of America. The barbed awns break up into pieces, penetrate the gums, especially near the teeth, producing swelling, and ultimately suppuration, of the gums, and ulceration of the jaw-bones and teeth, the latter being so loosened as to drop out. If the animal continues to eat hay containing this grass, the disease progresses till the bony tissue of the jaws is disarranged, the ulcers extend to all parts of the jaw-bone, and it becomes distorted and enlarged. The marrow-filled interior is changed into great cavities filled with the broken awns. This condition may continue till the cavities extend entirely through the jaw, and the tightly-packed awns protrude till they may be pulled out with forceps or fingers.

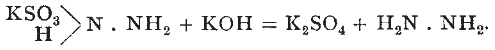
THE completeness of the series of Eocene and Cretaceous strata exposed along the great central river system of Alabama, is well known to American geologists. A report on the geology of the coastal plain of Alabama, just issued by the Geological Survey of that State, shows that, on account of the fine exposures along the river banks, and the great number and perfection of the fossils, the region presents the most complete and varied series of Eocene and Cretaceous strata known in the United States. All that relates to Cretaceous, Tertiary, and Post-Tertiary formations in the vicinity of the Alabama and Tombigbee rivers, is described in the first part of the report. The second part contains all the data of practical value concerning the various phosphatic marls, greensands, &c., occurring in the region surveyed, and the third part includes a number of geological details referring to the different counties of the State. Prof. E. A. Smith, the State Geologist, and those who have assisted him, may be congratulated upon the publication of this important account of the stratigraphy of the Cretaceous and Tertiary formations of the Gulf region of Alabama.

AN inorganic mode of preparing hydrazine, N_2H_4, is described by Dr. Duden, of the Jena University Laboratory, in the latest issue of the *Berichte*. Hitherto the numerous methods of formation of this important hydride of nitrogen, described by its discoverer, Prof. Curtius, and his assistants, and by Thiele and von Pechmann, have all been based upon the decomposition of more or less unstable organic compounds of the diazo, nitrosamine, or nitramine types. Dr. Duden has succeeded in an inorganic synthesis by use of a singular compound, discovered by Davy and further investigated by Raschig and by Divers and Haga, which is produced by the action of sulphurous acid upon potassium nitrite. This compound, whose composition is represented by the formula $K_2SO_3 . N_2O_2$, is now found to yield hydrazine upon careful reduction in alkaline solution. Divers and Haga showed that the ordinary products of reduction of the compound with sodium amalgam in concentrated alkaline solution are mainly potassium hyponitrite KNO and hydrogen potassium sulphite $HKSO_3$, smaller quantities of hydroxylamine and ammonia being likewise produced. Dr. Duden finds that if the reduction with sodium amalgam, or zinc dust and ammonia or soda, is carried out at a low temperature, the solution produced possesses very strong reducing properties, and after acidification deposits the salt of hydrazine corresponding to the acid employed. The freshly prepared compound of potassium sulphite and nitric oxide is suspended in water cooled by ice, and sodium amalgam is gradually added with further extraneous cooling by means of a freezing mixture, until the liquid is found to strongly reduce Fehling's solution and yields, after acidification and warming to expel sulphur dioxide, a precipitate of benzalazine upon the addition of benzaldehyde. The benzalazine so obtained is found to exhibit all the properties of the compound as described by Prof. Curtius; it melts at 93° and yields numbers on analysis exactly agreeing with the formula $(C_6H_5CHN)_2$. With sulphuric acid it yields hydrazine sulphate $(N_2H_4)_2 . H_2SO_4$, identical in melting point (256°) and all other properties with that derived from the organic methods of preparation. The formation of hydrazine from the compound of nitric oxide and potassium sulphite would appear to occur in two stages, an intermediate reduction compound being first produced of analogous constitution to Davy's salt in accordance with the following equation:



$$\begin{matrix}KSO_3\\KO\end{matrix}\Big\rangle N . NO + 6H = \begin{matrix}KSO_3\\H\end{matrix}\Big\rangle N . NH_2 + H_2O + KOH.$$

A further reaction then occurs between the intermediate compound and the alkali, with production of potassium sulphate and hydrazine



$$\begin{matrix}KSO_3\\H\end{matrix}\Big\rangle N . NH_2 + KOH = K_2SO_4 + H_2N . NH_2.$$

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus*, ♀) from India, presented by Mr. H. Ralls; a Black-backed Jackal (*Canis mesomelas*) from South Africa, presented by Mr. Fred Bissmire; a Dusty Ichneumon (*Herpestes pulverulentus*), a White-throated Monitor (*Varanus albigularis*) from South Africa, presented by Mr. J. E. Matcham; a Derbian Wallaby (*Halmaturus derbianus*) from Australia, presented by Mr. Joseph Palmer; a Jackal Buzzard (*Buteo jacal*) from South Africa, presented by Mr. E. Wingate; a Yellow-headed Conure (*Conurus jendaya*) from South-east Brazil, a Brown-throated Conure (*Conurus æruginosus*) from South America, presented by Mrs. Hankey; three Eroded Cinixys (*Cinixys erosa*), two Home's Cinixys (*Cinixys homeana*) from West Africa, presented by Mr. J. Banks Elliot; a Lesueur's Water Lizard (*Physignathus lesueuri*) from Australia, deposited; a Rosy-billed Duck (*Metopiana peposaca*), a Garden's Night Heron (*Nycticorax gardeni*) from South America, purchased.

OUR ASTRONOMICAL COLUMN.

THE PERSEID METEORS.—This well-known shower of meteors should be of the greatest interest to the mathematician, as well as to the observer. At Pulkova, in 1893, the shower was observed from July 22 to September 12, and a discussion of the 563 paths recorded forms the subject of an interesting paper by Dr. Bredichin (*Bull. Imp. Acad. Sc.*, St. Petersburg, September 1894). It has long been known that the Perseids are not as other regularly recurring meteor showers, and Dr. Bredichin explains their peculiarities by supposing that they are not produced by a swarm of meteorites, in the true sense of the word, but by particles circulating in different orbits. These orbits have widely differing inclinations, and the other elements also show striking departures from each other. One gets a good idea of the system which is suggested, by imagining a bundle of materialised orbits crossing the earth's orbit at the points which the earth occupies during August, and for some days before and after. The particles with long periods correspond to the meteors at the beginning of the showers, and to the primitive position of the comet from which the meteors are supposed to be derived, which, having a moderate period, has left these meteors behind. The position of the node of the comet is not symmetrical with reference to the nodes of the meteors, but appears to be nearer the beginning than the end of the showers. This con-